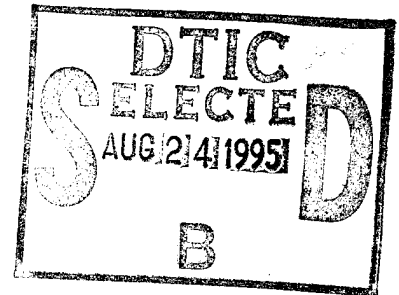


NAVAL WAR COLLEGE
Newport, RI

THE JOINT FORCE SURGEON AND
CASUALTY RECEIVING AND TREATMENT SHIPS:
A MALLEABLE ASSET WITH A DIVERSE CONTINUUM OF CARE

by



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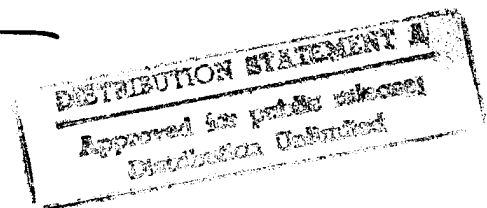
A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own opinions and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: _____

A handwritten signature in black ink, appearing to be "C. Butler", written over a horizontal line.

16 June 1995



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ABSTRACT

In this era of "force packaging" and complex joint operations, the Joint Force Surgeon must appreciate the health services support capabilities and limitations of each component's medical services. This paper reviews the echelons of medical care, briefly provides an understanding of where certain medical assets fit into the organizational scheme, and reviews the role and selected issues surrounding the Navy's casualty receiving and treatment ships in amphibious and joint operations. Saliently, the discussed issues attest to the need for the Joint Force Surgeon's participation in operational planning.

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INTRODUCTION

With the demise of the Soviet Union, the maritime strategy based on a Mahanian offensive sea-battle became antiquated and ineffective in meeting national interests. In 1992, the Navy-Marine Corps White Paper "...From the Sea" proclaimed a strategy of "operating forward, as part of a joint U.S. team, (that) can project U.S. combat power as required."¹ "Forward...From the Sea", the present Navy-Marine Corps annunciation of strategy precepts, reaffirmed the emphasis toward littoral warfare, forward presence and power projection while articulating the "critical necessity for forward deployed naval expeditionary forces (NEF) in order to deter and control crisis, enhance regional stability and respond rapidly."² The mainstay of the NEF are the carrier battle groups and the amphibious ready groups (ARG). "The big deck amphibious ship is the heart of every ARG."³

Given the revisions of naval power strategy; the realities surrounding budgetary constraints and force structure reappraisals; the shift from a monolithic superpower threat to one oriented to regional instabilities and diverse contingency requirements; and multiple long-term uncertainties regarding allies, adversaries and independently operating (self-interest) enmities, success with future operations depends on effective planning and adroit coordination and implementation by flexible leaders.

Operational logistics, which includes health services

support (HSS) for personnel treatment, evacuation and hospitalization, is one of numerous requisites for operational success. An understanding of capabilities and limitations of various treatment teams and platforms is a must for the Joint Force Surgeon (JFS). Designated by the combatant commander, the JFS is delegated a plethora of duties and responsibilities to include: coordinating HSS matters with the J4; recommending patient evacuation policy; supervising the activities of the Joint Medical Regulating Office (JMRO) and interfacing the Armed Forces Medical Regulating Office (AFMRO); directing the Joint Blood Program Office (JBPO); and ensuring hierarchial efficiency of all preventive medicine, veterinary, laboratory and dental services.^{4,5} Foremost, the JFS's primary responsibility is to the CINC's campaign and the over-arching mission of the Navy Medical Department: "minimize the effects of wounds, injuries, and diseases on unit effectiveness, readiness, and morale."⁶

In this era of "force packaging" and complex joint operations, the JFS must appreciate the HSS capabilities and limitations of each component's medical services. This paper will review the echelons of care, briefly provide an understanding of where certain medical asset fits into the organization scheme, and review the role and selected issues surrounding the Navy's casualty receiving and treatment ships (CRTS) in amphibious and joint operations. Additionally, the discussed issues will attest to the need for JFS participation in operational planning.

ECHELONS OF MEDICAL CARE

Contemporary wartime military medical services are distributed based on a phased health care system known as "echelons." Five echelons of care make up the Health Services Support system that extends from the point of injury to continental United States (CONUS). "Each succeeding echelon possesses the same treatment capabilities as those echelons forward of it and adds a new increment of treatment capability that distinguishes it from the previous echelon."⁷

ECHELON I. Initial care is provided through "buddy aid", the company corpsman, or the battalion aid station (BAS). The battalion aid station has organic to it a physician and provides essential emergency treatment to return casualties to duty or prepare them for evacuation. The BAS can establish and maintain an airway, control hemorrhage, apply field dressings, administer analgesia, and administer intravenous fluids and antibiotics.

ECHELON II. Care is provided by a health care team including physicians, nurses and technicians. Minimally, this echelon of care includes basic resuscitation and stabilization. It does include initial resuscitative surgery but no care is provided that goes beyond the immediate necessities to save life and limb. Echelon II units have the capability to temporarily hold those patients awaiting further evacuation or return to duty. Additionally, this is the first echelon that Group O blood is available for transfusion. Echelon II health care is delivered

by Marine Corps medical battalions and casualty receiving and treatment ships (CRTS).

ECHELON III. Care administered at this level includes resuscitation, initial wound surgery and postoperative care. "This echelon's care may be the first step toward restoration of functional health"⁸; is located in a low enemy threat environment; is not limited to life/limb stabilization; and has available a potpourri of blood products. These clinical capabilities are normally found in medical treatment facilities (MTF).

ECHELON IV. In this echelon the patient is treated in a general hospital or military treatment facility staffed and equipped to provide definitive care and includes all surgical capabilities. "The mission of these hospitals is the rehabilitation of casualties to duty status, or if rehabilitation cannot be accomplished within the permitted holding period, their evacuation."⁹

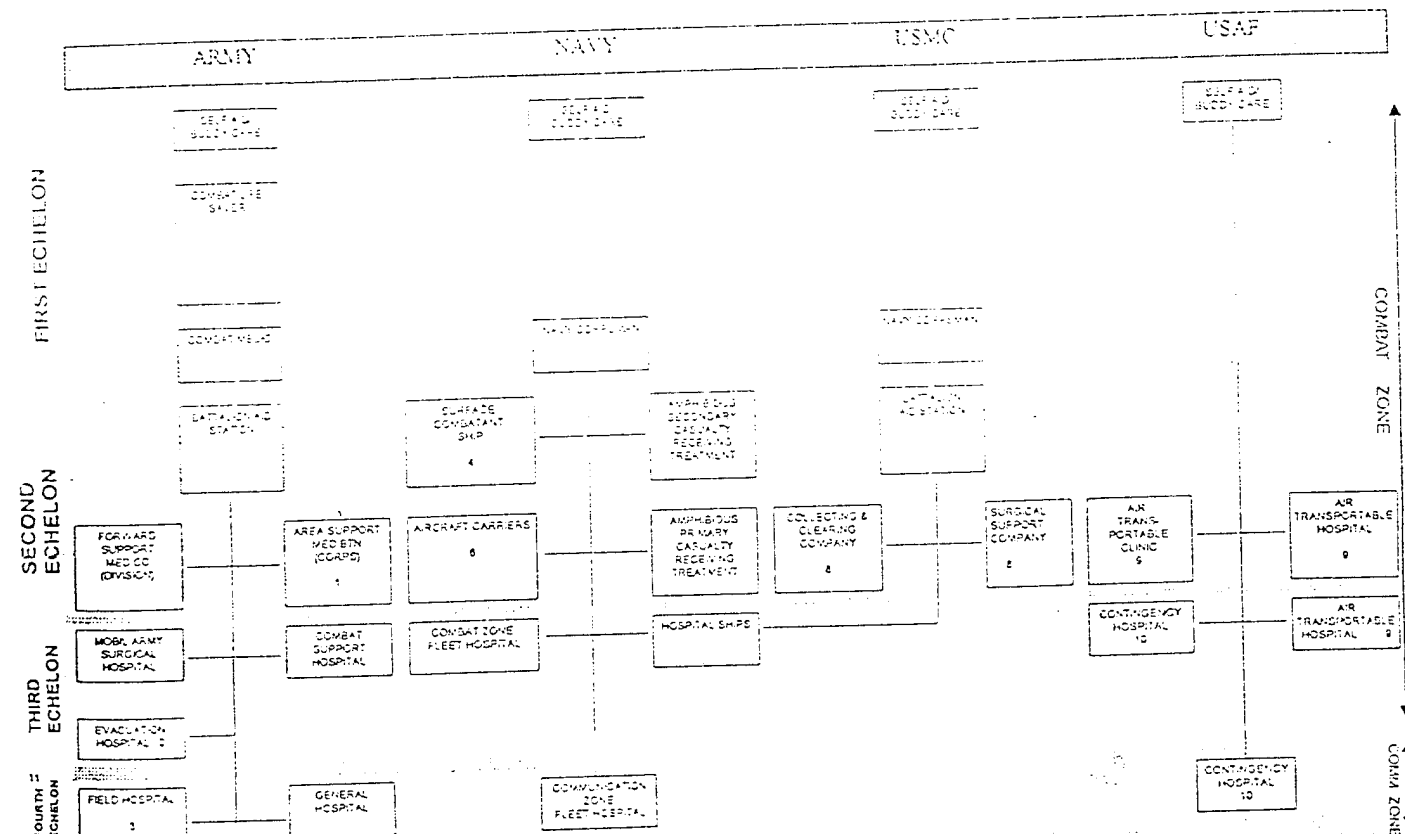
ECHELON V. "Care is convalescent, restorative, and rehabilitative and is normally provided by military, Department of Veteran Affairs, and/or civilian hospitals in CONUS."¹⁰

Echelonment is not proscriptive, but rather an organizational and functional overlay for outlining and evaluating the continuum of care. In the modern battlefield, the functions at various echelons can be curtailed to meet contingency needs and one or more echelons can be bypassed in the treatment of casualties in order to expedite definitive care and

evacuation. It is imperative that each treatment "team", regardless of echelon of care, be integrated into the theater-wide evacuation system.

TABLE 1

ECHELONS OF CARE/DOD THEATER COMBAT MEDICAL SYSTEM



- NOTES:
1. WE BE EMPLOYED IN BOTH COMBAT ZONE (ECHELONS TWO AND THREE) AND COMMUNICATION ZONE
 2. UNIT WILL BE IN PHASE OUT IN FY94
 3. NORMALLY EMPLOYED IN COMMUNICATION ZONE, CAN BE EMPLOYED IN THE COMBAT ZONE
 4. TYPICALLY HAVE INDEPENDENT DUTY HOSPITAL CORPSMAN AND NO MEDICAL OFFICER
 5. LIST CLASS SHIPS DO NOT HAVE MEDICAL OFFICER ASSIGNED
 6. VERY LIMITED RESUSCITATIVE SURGERY CAPABILITY

7. WITH PERSONNEL AUGMENTATION HAVE LIMITED RESUSCITATIVE SURGERY CAPABILITY
8. HAVE ORGANIC LIMITED RESUSCITATIVE SURGERY CAPABILITY
9. MAY, SCENARIO DEPENDENT, BE EITHER A SECOND OR THIRD ECHELON MTF
10. LIMITED SPECIALTY CARE IN ECHELON THREE AND COMPREHENSIVE SPECIALTY CARE IN ECHELON FOUR
11. FIXED TREATMENT FACILITY NOT SHOWN

Source: JCS Pub 4-02 Doctrine for Health Services Support in Joint Operations, Washington 1993.

THE CONCEPT OF CASUALTY RECEIVING AND TREATMENT SHIPS (CRTS)

The primary mission of amphibious ships is to transport troops and their equipment. With the disembarkment of troops, LHD, LHA, and LPH amphibious ships assume the role of casualty receiving and treatment ships (Appendix A and B) in support of landing forces until reassigned to a different locale.

The CRTS and embarked combat units have organic medical assets responsible for the medical care of parent command personnel and preventive medicine functions. In addition, deployed Amphibious Ready Groups normally have embarked a Fleet Surgical Team (FST), which is a "21 man medical augmentation team permanently assigned to Fleet CINCs."¹¹ The FST (Appendix C) is assigned during peacetime operations; plans, trains and executes day-to-day operations as a cohesive medical-surgical team; provides complementary medical capabilities to ensure support of the multitude of missions identified as independent ARG/MEU(SOC) operations (Appendix D); and has a complete understanding of platform capabilities and missions. Augmented with an FST, CRTS are capable of expanded surgical and medical care. Care is not limited to resuscitation and includes initial wound surgery and post-operative care. Although not a conventionally approved designation, the care is described as echelon 2.5. It fails to qualify as echelon 3 care because of a limited spectrum of complex surgical capabilities and paucity of orthopedic care.

Mobile Medical Augmentation Readiness teams (MMART),

assigned during peacetime and based in CONUS MTF's, include medical, surgical, orthopedic and psychiatric subspecialists. These teams adeptly provide echelon 3 treatment and are normally constrained by platform and ancillary support capabilities. CRTS deploy with MMART supplies aboard but supplementation of operating forces with MMART personnel must be requested by task force commanders. In requesting augmentation, the JFS understanding of the task force mission(s) and medical support requirements is paramount. Options include complete and sequential augmentation. Complete augmentation, while guaranteeing on-site, ready medical personnel and on-going team training in preparation for the task(s), requires increased platform space. Physical space on an amphibious ship is at a premium and increasing medical assets may come at a cost to fighting forces. Incremental or sequential augmentation limits the number of personnel on the platform initially and increases these assets prior to selectively planned operations. This type of augmentation requires increased transportation coordination for team delivery and denies on-site training prior to execution the operation. As a positive aspect, as the time of execution approaches and new or updated information becomes available, delayed augmentation would provide the JFS the opportunity to reevaluate and economize health care teams by possibly coordinating utilization of nearby or other contingency staffs or selectively requesting subspecialty care groups.

During wartime operations, the Medical Augmentation Program

(MAP) provides medical department specialist and personnel to Fleet Hospital Ships, Combat-Zone Fleet Hospitals and CRTS. The Navy's medical operational support requirements (MOSR), an integral part of the Total Health Care Support Readiness Requirement (THCSRR), has identified manpower requirements for contingency platforms and has evaluated appropriate assignment priorities to meet "the Navy's two readiness missions: day-to-day operations and wartime."¹² "Issues effecting sustainment, training and Graduate Medical Education"¹³ are undergoing scrutiny. This will address, in the long-term, the inherent degraded capabilities resulting from budgetary constraints, multiple training priorities and "operational" (peacetime health missions) requirements that may culminate in unfamiliar or inexperienced augmentation personnel being assigned.

Thus, multiple augmentation options allow the combatant commander and JFS the opportunity to configure CRTS medical services through the spectrum of echelon 2 and echelon 3 care. It is incumbent upon the JFS to have a fundamental knowledge of CRTS augmentation possibilities to include implementation constraints and elasticity of services; ensure integration of CRTS medical capabilities into the larger operational plan; optimize resource consumption through coordinated utilization; and, most importantly, mandate appropriate planning at all levels to economize medical forces while optimize treatment availability.

CASUALTY ESTIMATION

The concepts of amphibious operations have undergone numerous changes as the result of new communication and weapon technology and improved assault vehicles. Over-the-horizon (OTH) amphibious operations capitalize on the tactical aspects of maneuver warfare while negating the enemy's anti-ship weapon threat (mines and cruise missiles). The increased distance from the landing zone, the multitude of conventional weapons in an adversaries arsenal with which to inflict casualties and the spectrum of non-conventional weapons threats present numerous challenges to the Joint Force Surgeon.

"The casualty estimate is an important part of the personnel replacement picture and... medical support requirements cannot be determined without a realistic casualty estimate of each course of action."¹⁴ Various methods of analysis of casualty estimation are available¹⁵ and each integrates a plethora of factors into determining "the two major categories of patients: wounded-in-action (WIA) and disease and non-battle injury (DNBI)."¹⁶ Unfortunately, the rate tables and computation factors have been compiled from previous warfare data (Cold War conflicts) and should be employed with the understanding of this limitation and adjusted through common sense, "previous experience,"¹⁷ and with the combat service support principles of flexibility and responsiveness in mind. Casualty estimates are just that...estimates. The JFS is faced with a difficult challenge in

casualty estimation as a result of a dearth of empiric data regarding modern day amphibious assaults or limited force entry operations. Thus, contingency planning, diversity of training and flexibility of response must expiate dubious casualty estimates.

TREATMENT AND EVACUATION ISSUES

In spite of the formidity associated with casualty estimation, it is generally accepted that "the highest casualty rates usually occur during the critical assault phase of an amphibious operation."¹⁸ This high morbidity and mortality period corresponds to the "time when medical services have a minimum number of personnel and facilities ashore."¹⁹ Confounding the disparity between availability of functional medical assets on the landing zone and the accumulating requirement for medical assistance is the proposed plan for revamping the Marine Corps' medical battalion, the reliance on transportation of opportunity for retrograde evacuation, and the expediency mandated to ensure casualties do not suffer disability or mortality secondary to delayed treatment.

In order to support operational maneuver from the sea (OMFSTS), the Naval Medicine Doctrine Command evaluated the missions and operational requirements of a Marine Corps Medical Battalion and has proposed restructuring. This revision will culminate in a 38% lighter force that is a forward deployed, resuscitation intense (echelon 2) team; has minimized lift requirements; has the mobility necessary to accompany combat maneuver elements anywhere; and has the "greatest deployment flexibility to allow personnel and equipment augmentation for humanitarian, geographic and other mission-specific taskings."²⁰ Although capable of holding casualties, this echelon 2 team

depends on expeditious retrograde evacuation in order to maintain its flexibility and fluidity in the amphibious operation area (AOA).

As previously stated, casualty evacuation from the AOA to CRTS is by transportation of opportunity. Presently available means of lift include helicopters, amphibious assault vehicles (AAV's) and Landing Craft Air Cushion (LCAC). Each has its advantages and requisites for utilization. Helicopters have the greatest speed and flexibility and are the primary mode for accomplishing medevacuation. The finite number of deployed helicopters; the decreased functional capabilities of the CH-46 in distances anticipated to be operationally required; the real and potential threat of enemy anti-air assets and lack of air superiority; severe weather restrictions; and competitive environment of priorities represent some of the constraints on helicopter evacuation.

"In the execution of high-speed maneuver from the sea in a missile environment, assault amphibious vehicles (AAV's) are simply too slow for the distances to be covered in ship-to-shore movements."²¹ Since they would not be routinely employed to deliver troops, they would not be available on the beach for early medevacuation needs. In a minimal or no threat environment, utilization could be anticipated but the casualty rate could be expected to be minuscule and medevacuation requirements nonexistent.

The Landing Craft Air Cushion (LCAC) is the primary surface delivery vehicle for the Marine Corps. In its standard configuration it provides nominal medical support in that "it has no internal capabilities to evacuate stretcher casualties, and only a limited (24 patient) ambulatory patient capacity within the craft's troop compartment."²² Numerous modification options are being evaluated by the Marine Corps to increase the utilization of the external deck surface for troop and equipment transfer. One option, a collapsible or semi-rigid shelter known as the Marine Corps Expeditionary Shelter System (MCESS), expands medevacuation capabilities to 30 ambulatory cases and, based on the modified configuration, from nine to 15 litter patients. Another improvement is a modification package that enables the LCAC to perform five different missions while simultaneously performing its primary mission. Known as a multimission craft air cushion (MCAC), one of the modifications would be the option to mount a personnel transport module (PTM) on the deck. For medevacuation, "the PTM can be configured to carry up to 54 stretcherborne casualties in one load from the beach out to a ship or from one ship to another."²³ On face value, the MCAC with PTM option appears to offer great possibilities for medical regulating from CRTS to MTF's and hospital ships but the reality is that neither echelon 3 platform is configured for patient off-loading or transfer once the transport vehicle arrives on station. This and the problems in the MCESS and PTM associated with a high noise environment, poor internal communication

capability, and limited medical attendant space are presently being evaluated.²⁴

THEATER EVACUATION POLICY

The theater evacuation policy, proscribed by the operational commander, establishes the "maximum period of noneffectiveness that patients may be held within a facility."²⁵ This policy applies to the local area; is adjusted to facilitate changing demands and circumstances; and is recommended to the commander by the JFS. When recommending a maximum length of stay, the JFS must appreciate numerous factors that counterbalance one another and represent trade-offs for the warfighters and medical community. With an extended stay policy, retention of trained and experienced personnel in theater is facilitated (with the recovery from injury and return to duty) and medical regulating transportation requirements are reduced. Additionally, a lengthened stay policy results in the utilization of theater medical resources and personnel for restorative and recuperative care and translates into increased nonavailability of intra-theater beds. Alternatively, a short theater evacuation policy is transportation intense, requires extensive intra- and inter-theater medical regulating coordination, increases combat personnel replacement requirements and may not be operational feasible secondary to duration or intensity of combat operations.

In recommending the evacuation policy in the AOA, the JFS must be cognizant of the augmentation status of the CRTS; the bed availability and anticipated casualty estimation for pending operations; the availability of medical regulating assets for higher echelon transfer; and the upcoming CRTS mission(s).

CONCLUSION

The discussion, although not all inclusive and skewed to selected topics of the author's choice, demonstrate numerous "take home" lessons.

First, the JFS's understanding of the warfighter's course of action, mission constraints, command mandates and resource availability will allow for the preparation and implementation of a tailored HSS plan that aggrandizes the CINC's campaign plan.

Secondly, to ensure appropriate augmentation and utilization of the casualty and receiving ships and establish acceptable theater medical policies, the JFS must be involved in all stages of operational planning.

And lastly, the functional spectrum of medical assets and CRTS platforms will be expected to operate along a broad continuum. The elasticity of function of the CRTS allows for efficacious exploitation of opportunities and advantages.

It is paramount that the JFS understand the opportunities and implications of all aspects of naval medical asset management to ensure integration, interoperability and synchronization of joint effort. The casualty and receiving ship is a medical "support-arms" team with a plethora of capabilities and augmentation options that allows for an effective response across the spectrum of military operations with complete continuum of care.

FOOTNOTES

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APPENDIX A: AFLOAT MEDICAL CAPABILITIES OF AMPHIBIOUS SHIPS

	OPERATING ROOMS	PRIMARY CARE BEDS	ISOLATION BEDS BEDS	INTENSIVE CARE BEDS	STEPDOWN- ICCU BEDS	OVERFLOW BEDS
LHD	6	40	6	14	2	600
LHA	4	48	4	17	0	300
LPH	1	16	4	2	0	125
LCC	0	23	0	0	0	0
LPD	0	6 TO 8	2	0	0	75
LSD-41	0	6	0	0	0	100
LKA-113	0	10	0	0	0	75
LSD-36	0	9	0	0	0	100
LST-1179	0	4	0	0	0	0

	GMO	GDO	MSC	BLOOD (NORMAL/CAPACITY)
LHD	1	1	1	600/1200
LHA	1	1	1	325/1000
LPH	1	1	0	NONE
LCC	1	1	0	NONE
LPD	1	1	0	NONE
LSD-41	1	1	0	NONE
LKA-113	1	0	0	NONE
LSD-36	0	0	0	NONE
LST-1179	0	0	0	NONE

Source: COMPHIBGRU TWO Medical Capabilities Briefsheet

APPENDIX B: AMPHIBIOUS PLATFORM CAPABILITY MATRIX

PLATFORM	ORGANIC CAPACITY	AUGMENTATION CAPACITY	FINDINGS
LHD	ECHELON 2	ECHELON 2.5 WITH FST LIMITED ECHELON 3.0 WITH MAP	FULLY CAPABLE CRTS FULL OR CAPABILITY CAN PROVIDE LIMITED ECHELON 3 CARE IN LRC MRC ECHELON 3 FOR 3-5 DAYS FROZEN BLOOD CAPABLE
LHA	ECHELON 2	ECHELON 2.5 WITH FST LIMITED ECHELON 3.0 WITH MAP	FULLY CAPABLE CRTS FULL OR CAPABILITY CAN PROVIDE LIMITED ECHELON 3 CARE IN LRC MRC ECHELON 3 CAPABLE FOR 3-5 DAYS FROZEN BLOOD CAPABLE
LPH	ECHELON 2	ECHELON 2.5 WITH FST	LIMITED CRTS CAPABLE OR's CERTIFIED FOR LIMITED EMERGENCY SURGERY LIMITED OXYGEN SUPPLY, LIMITED ICU NO FROZEN BLOOD

APPENDIX C: FLEET SURGICAL TEAM

1 GENERAL SURGEON
1 FAMILY PHYSICIAN
1 PRIMARY CARE PHYSICIAN
1 NURSE ANESTHETIST
1 OPERATING ROOM NURSE
1 CHARGE NURSE
3 OPERATING ROOM TECHNICIANS
1 MEDICAL REGULATING OFFICER
1 ADVANCED HOSPITAL CORPSMAN
7 GENERAL DUTY CORPSMEN

APPENDIX D: ARG/MEU(SOC) INDEPENDENT OPERATIONS

**AMPHIBIOUS RAID (HELO/CRRC)
MOBILE TRAINING TEAMS
SHOW OF FORCE
COUNTERINTELLIGENCE
REINFORCEMENT OPERATIONS
IN-EXTRMIS HOSTAGE RESCUE
SECURITY OPERATIONS
CIVIC ACTION (MED/DENCAP)
FIRE SUPPORT CONTROL
SIGINT/EW OPERATIONS
SPECIAL DEMO OPERATIONS
MILITARY OPS IN URBAN TERRAIN (MOUT)
TRAP
TACTICAL DECEPTION OPERATIONS
INITIAL TERMINATION GUIDANCE
MARITIME INTERDICTION OPERATIONS
LIMITED OBJECTIVE ATTACKS
MASS CASUALTY
NEO OPERATIONS
AIRFIELD SEIAURE
GAS AND OIL PLATFORM OPERATIONS
SHIP REINFORCEMENT
RECOVERY OPERATIONS**